

Marie Juliette Kurz, Ph.D.

Senior Scientist, Biogeochemistry Section Leader & Assistant Research Professor

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RESEARCH INTERESTS

Coupled dynamics of ecology and geochemistry in freshwater systems; Solute sources, (reactive) transport & cycling; Whole-stream ecosystem function; Groundwater-surface water interactions; Catchment-scale solute & ecosystem dynamics; Restoration & (adaptive) management of water resources & aquatic ecosystems.

EDUCATION

- PhD** Geology - **University of Florida** (*Gainesville, FL*) 2013
Environmental Engineering Sciences graduate minor, Hydrologic Sciences certificate
Dissertation: Biogeochemical and hydrologic controls on solute sources and cycling in a biologically productive karst river.
Advisor: Dr. Jon Martin; *Committee:* Drs. Matt Cohen, Mark Brown, Liz Sreaton & Pete Adams
- BS** Geology - **The College of William & Mary** (*Williamsburg, VA*) 2007
Environmental concentration, Anthropology minor
Thesis: Looking for 'Landscape Knickzones' in the Virginia Piedmont: Evaluating Landscape Disequilibrium Through GIS-Based Analysis of Hillslopes and Channels.
Advisor: Dr. Gregory Hancock

ACADEMIC & PROFESSIONAL HISTORY

- Senior Scientist & Biogeochemistry Section Leader** 2016 - Present
Patrick Center for Environmental Research, The Academy of Natural Sciences of Drexel University (Philadelphia, PA)
- Assistant Research Professor** 2016 - Present
Dept. of Biodiversity, Earth & Environmental Science, Drexel University (Philadelphia, PA)
- Staff Scientist/ Wissenschaftliche Mitarbeiter** 2013 - 2016
Dept. Hydrogeology, Helmholtz Center for Environmental Research – UFZ (Leipzig, Germany)
- Alumni Fellow & Graduate Research Assistant** 2007 - 2013
Dept. of Geological Sciences, University of Florida (Gainesville, FL)
- NSF IGERT (Integrated Graduate Education & Research Traineeship) Fellow** 2007 - 2011
"Adaptive Management: Wise use of Water, Wetlands & Watersheds", University of Florida (Gainesville, FL)
- NSF REU (Research Experience for Undergraduates) Trainee** 2006 (3 mo.)
University of Arkansas (Fayetteville, AR)

PUBLICATIONS

- Blaen P.J., **Kurz M.J.**, Drummond J.D., Knapp J.L.A., Mendoza-Lera C., Schmadel N.M., Klaar M.J., Jäger A.*, Folegot S.*, Lee-Cullin J., Ward A.S., Zarnetske J.P., Datry T., Milner A.M., Lewandowski J., Hannah D.M., Krause S. (2018) Woody debris is related to reach-scale hotspots of lowland stream ecosystem respiration under baseflow conditions. *Ecohydrology*, <https://doi.org/10.1002/eco.1952>.
- Folegot S.*, Hannah D.M., Dugdale S.J., **Kurz M.J.**, Drummond J.D., Klaar M.J., Lee-Cullin J.*, Keller T., Marti E., Zarnetske J.P., Ward A.S., & Krause S. (2018) Low flow controls on stream micro-thermal dynamics. *Limnologia* 68: 157-167, <https://doi.org/10.1016/j.limno.2017.08.003>.
- Baranov, V.*, Milošević, D., **Kurz, M.J.**, Zarnetske, J.P., Sabater, F., Marti, E., Robertson, A., Brandt, T.*, Sorolla, A., Lewandowski, J., and Krause, S. (2017) Helophyte impacts on the response of hyporheic invertebrate communities to inundation events in intermittent streams. *Ecohydrol.*, <https://doi.org/10.1002/eco.1857>.

10. **Kurz M.J.**[†], Drummond J.D.[†], Marti E., Zarnetske J.P., Lee-Cullin J.*[†], Klaar M.J., Folegot S.*[†], Keller T., Ward A.S., Fleckenstein J.H., Datry T., Hannah D.M., & Krause S. (2017) Impacts of water level on metabolism and transient storage in vegetated lowland rivers - insights from a mesocosm study. *J. Geophys. Res. Biogeosci* 122. doi:10.1002/2016JG003695. [†]Authors contributed equally
9. Khadka M.B., Martin J.B. & **Kurz M.J.** (2017) Synoptic estimates of diffuse groundwater seepage to a spring-fed karst river at high spatial resolution using an automated radon measurement technique. *J. Hydrology* 544: 86-96. <https://doi.org/10.1016/j.jhydrol.2016.11.013>.
8. Vieweg M.*[†], **Kurz M.J.**, Trauth N., Fleckenstein J.H., Musolff A. & Schmidt C. (2016) Estimating time-variable aerobic respiration in the streambed by combining electrical conductivity and dissolved oxygen time-series, *J. Geophys. Res. Biogeosci* 121. doi:10.1002/2016JG003345.
7. Martin J.B., **Kurz M.J.** & Khadka M.B. (2016) Climate control of decadal-scale increases in apparent ages of eogenetic karst spring water. *J. Hydrology* 540: 988-1001, doi:10.1016/j.jhydrol.2016.07.010.
6. Schmadel N.M., Ward A.S., **Kurz M.J.**, Fleckenstein J.H., Zarnetske J.P., Hannah D.M., Blume T., Vieweg M.*[†], Blaen P.J., Schmidt C., Knapp J.L.A.*[†], Klaar M.J., Romeijn P.*[†], Datry T., Keller T., Folegot S.*[†], Marruedo A.I.*[†] & Krause S. (2016) Stream solute tracer timescales changing with discharge and reach length confound process interpretation. *Water Resour. Res.* 52: 3227–3245, doi:10.1002/2015WR018062.
5. **Kurz M.J.**, Martin J.B., and Cohen M.J. (2015) Diffusion and seepage-driven element fluxes from the hyporheic zone of a karst river. *Freshwater Science* 34(1), 206-221.
4. **Kurz M.J.**, deMontety V., Martin J.B., Cohen M.J., and Foster C. (2013) Controls on diel metal cycles in a biologically productive carbonate-dominated river. *Chemical Geology* 358: 61-74.
3. Cohen M.J., **Kurz M.J.**, Heffernan J.B., Martin J.B., Douglass R.L., Foster C.R., and Thomas R.G. (2013) Diel phosphorus variation and the stoichiometry of ecosystem metabolism in a large spring-fed river. *Ecological Monographs* 83(2), 155-176.
2. de Montety V., Martin J.B., Cohen M.J., Foster C. and **Kurz M.J.** (2011) Influence of diel biogeochemical cycles on carbonate equilibrium in a karst river. *Chemical Geology* 283(1-2), 31-43.
1. de Montety V., Martin J.B., **Kurz M.J.**, Cohen M.J. and Foster, C. (2010) Influence of biogeochemically induced carbonate cycles on metals content of a karst river, in Birkle P. & Torres-Alvarado I.S., eds., *Water-Rock Interaction XIII*: Taylor & Francis Group, London. ISBN 978-0-415-60426-0

* Indicates student authors

SELECTED CONFERENCE ABSTRACTS & INVITED TALKS

- Kurz M.J.**, Haag S., Kroll S.A., Collier C., & Wall R. (2018) Science-Driven Protection of Source Water Quality and Ecosystem Integrity in the Delaware River Basin. American Geophysical Union Fall Meeting, Washington DC.
- Kurz M.J.**, Ledford S.H., Ward A.S., & Toran L. (2018) Point Source Nutrient Effects on Metabolic Activity and Reactive Solute Transport in an Urban Stream. American Geophysical Union Fall Meeting, Washington DC.
- Ward A.S., Harman C.J., Schmadel N.M., **Kurz M.J.**, Blaen P., Wondzell S.M., Drummond J.D., Hannah D.M., Knapp J.L.A., Krause S., Li A., Marti E., Miller M., Milner A., Neil K., Plont S., Roche K.R., Packman A.I., Wisnoski N., & Zarnetske J.P. (2018) How do evapotranspiration-driven discharge fluctuations alter reach-scale ecosystem function? (*Invited*) American Geophysical Union Fall Meeting, Washington DC.
- Kurz M.J.** & Schmidt C. (2017) Coupled Spatio-Temporal Patterns of Solute Transport, Metabolism and Nutrient Uptake in Streams. American Geophysical Union Fall Meeting, New Orleans, LA.
- Martin J.B., Brown A.L., **Kurz M.J.**, Khadka M.B. & Kamenov G.D. (2017) Springs: Windows into decadal-scale karst aquifer processes (*Invited*). Geological Society of America Annual Meeting, Seattle, WA.
- Kurz M.J.** (2017) Attempting to link metabolism, transient storage and hydro-morphology in streams: Insights from reactive tracer experiments. Earth Sciences Group research seminar, Sep. 18, 2017, Oak Ridge National Lab, Oak Ridge, TN. (*Invited Seminar*)
- Kurz M.J.**, Kroll S.A. & Velinsky D. (2017) Restoring and protecting water quality and ecosystem integrity in the Delaware River Watershed. 6th International Multidisciplinary Conference on Hydrology and Ecology (HydroEco), Birmingham, UK.
- Kurz M.J.** (2017) Biogeochemical controls on diel (24-hr) element cycling and ecological availability in a biologically productive spring-fed river. Dept. Earth & Environmental Science Departmental Seminar, Jan. 27, 2017, Temple University, Philadelphia, PA. (*Invited Seminar*)

- Kurz M.J.**, Drummond J.D., Marti E., Zarnetske J.P., Lee-Cullin J., Klaar M.J., Folegot S., Keller T., Ward A.S., Fleckenstein J.H., Datry T., Hannah D.M., & Krause S. (2016) Impacts of water level on metabolism and transient storage in vegetated lowland rivers - insights from a mesocosm study. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.** (2017) Biogeochemical controls on diel (24-hr) element cycling and ecological availability in a biologically productive spring-fed river. Center of Applied Geosciences GeoEnviron Seminar, June 3, 2016, University of Tübingen, Tübingen, Germany. (*Invited Seminar*)
- Kurz M.J.**, Schmidt C., Blaen P., Knapp J.L.A., Drummond J.D., Martí E., Zarnetske J.P., Ward A.S., Krause S., The Leverhulme Hyporheic Zone Network Team (2016) Attempting to link hydro-morphology, transient storage and metabolism in streams: Insights from reactive tracer experiments (*Invited*). EGU General Assembly, Vienna, Austria.
- Kurz M.J.**, Schmidt C., Anlanger C., Risse-Buhl U., von Schiller D. (2015) Influence of stream morphology on metabolism and reactive solute transport. Goldschmidt 2015, Prague, Czech Republic.
- Kurz M.J.**, Schmidt C., Fleckenstein J.H., Keller T., Krause S., Romeijn P., Blaen P., Klaar M.J., Hannah D., Knapp J., Ward A.S., Larned S., Zarnetske J.P. (2015) Spatial and temporal dynamics of hyporheic respiration under variable discharge conditions. 5th International Multidisciplinary Conference on Hydrology and Ecology (HydroEco), Vienna, Austria.
- Schmidt C., **Kurz M.J.**, Fleckenstein J.H. (2015) Non-parametric estimation of subreach solute travel time distribution from multiple tracer breakthrough curves. EGU General Assembly, Vienna, Austria.
- Cohen M.J., Nifong R.L., **Kurz M.J.**, Cropper W.P., Martin J.B. (2014) Stoichiometry, metabolism and nutrient limitation across the periodic table in natural flowing-water chemostats (*Invited*). American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Schmidt C., Knapp J.L.A., et al. (2014) Spatial and temporal dynamics of hyporheic respiration under variable discharge conditions. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Martin J.B., Cohen M.J., de Montety V., Nifong R.L. (2013) Elemental sources, cycling and ecological availability in rivers in carbonate terrains: An interdisciplinary perspective. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Martin J.B. and Cohen M.J. (2012) Interactions Between Diffuse Groundwater Recharge and Hyporheic Zone Chemistry in Spring-Fed River: Implications for Metal, Nutrient & Carbonate Cycling. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Martin J.B., Cohen M.J., Douglass R.L., Foster C. (2011) Influence of autotrophic assimilation on diel cycling of major and trace elements in streams. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Martin J.B., Cohen M.J. (2010) Pore-Water Chemistry and Hydrology in a Spring-Fed River: Implications for Hyporheic Control of Nutrient Cycling and Speleogenesis. American Geophysical Union Fall Meeting, San Francisco, CA.
- Kurz M.J.**, Martin J.B., de Montety V. (2009) Pore-water chemistry in a spring-fed river: Implications for hyporheic control of nutrient cycling and speleogenesis. Geological Society of America Annual Meeting, Portland, OR.
- Kurz M.**, and Hancock G. (2007) Looking for 'Landscape Knickzones' in the Virginia Piedmont: Evaluating Landscape Disequilibrium Through GIS-Based Analysis of Hillslopes and Channels. Annual Meeting of the Southeastern Section of the Geological Society of America, Charleston, SC.
- Kurz M.**, Patton J., Boss S. (2006) Comparative Geomorphic Analysis of Three Sub-Watersheds of Beaver Reservoir, Northwest Arkansas. Geological Society of America Annual Meeting, Philadelphia, PA.

RESEARCH GRANTS & CONTRACTS

<i>Comprehensive Scientific Direction for Planning, Implementing, and Evaluating the Delaware River Watershed Initiative</i> , The William Penn Foundation (Co-PI)	2018
<i>Characterization of Existing Aquatic and Terrestrial Conditions in the Erdenheim Farm Valley</i> , Whitemarsh Foundation (Co-PI)	2017
<i>RAPID: Collaborative Research: Evaluating Ecosystem Respiration in Urban Streams Using Reactive Tracer and Dissolved Oxygen Loggers</i> , National Science Foundation (Co-PI)	2017
<i>Professional Services for Biological Monitoring Program Support</i> , Delaware River Basin Commission (Project Lead)	2017

FELLOWSHIPS & AWARDS

<i>Alumni Graduate Fellowship</i> , University of Florida	2007-2013
Cover feature article, <i>Ecological Monographs</i> Vol. 83, Issue 2	2013
<i>Horn Award</i> (Outstanding Graduate Student), Dept. Geological Sciences, Univ. of Florida	2012
<i>NSF-IGERT Graduate Fellowship</i> , 'AM:W3', University of Florida	2007-2011
<i>NSF-REU Fellowship</i> , University of Arkansas	2006

TEACHING

Drexel University

Geochemistry (GEO 309)	2018
Groundwater Geology (GEO 412)	2018-2019

University of Florida

Florida Geology Lab (GLY 1150L) – Instructor	2012
Groundwater Geology (GLY 4930/5827) – Teaching Assistant	2010
Hydro and Human Affairs (GLY 3882) – Teaching Assistant	2010
Water, Environment and Society (EES 4932) – Co-Instructor	2008

PROFESSIONAL ACTIVITIES

Professional Service

Convener and/or Chair for AGU Fall Meeting Session on Groundwater – Surface Water Interactions	2016-2018
Reviewer for: <i>Aquatic Sciences</i> , <i>Biogeochemistry</i> , <i>Journal of Hydrology</i> , <i>Limnologica</i> , <i>Water Resources Research</i>	

Memberships & Affiliations

American Geophysical Union (AGU)	European Association of Geochemistry (EAG)
Geological Society of America (GSA)	Earth Science Women's Network (ESWN)
European Geosciences Union (EGU)	

Workshop Participation

<i>Early Career Geoscience Faculty Workshop</i> , On the Cutting Edge	2018
<i>2017 Delaware Estuary Science and Environmental Summit</i> , Partnership for the Delaware Estuary	2017
<i>4th & 5th Annual Delaware River Watershed Forum</i> , Coalition for the Delaware River Watershed	2016,2018
<i>Berkeley Catchment Science Symposium</i> , Berkeley Water Center	2014-2015
<i>International Workshop on Temporal High Resolution Water Quality Monitoring and Analysis</i> , Helmholtz-UFZ	2014
<i>NSF Research Day</i> , I-Cubed Program, Univ. of Florida	2011-2012
<i>Preparing for an Academic Career in the Geosciences Workshop</i> , On the Cutting Edge	2012
<i>Florida Springs Science Symposium</i> , North Florida Springs Alliance	2012
<i>Ichetucknee Preservation Research Workshop</i> , Three Rivers Trust Inc.	2010